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PART II

DEPARTMENT OF TRANSPORTATION

Coast Guard

■

ADDITIONAL EQUIPMENT FOR VESSELS OF 10,000 GROSS TONS OR MORE; INERT GAS SYSTEM; TANK VESSELS CARRYING OIL IN TRADE; IMPROVED EMERGENCY STANDARDS FOR OIL TANKERS

Proposed Rulemaking

DEPARTMENT OF TRANSPORTATION

Coast Guard

[33 CFR Part 157]

[CCG 77-058]

TANK VESSELS CARRYING OIL IN TRADE

Protection of Marine Environment

AGENCY: Coast Guard, DOT.

ACTION: Proposed rule.

SUMMARY: The Coast Guard is considering amending the rules for the protection of the marine environment relating to tank vessels carrying oil in bulk by requiring all oil tankers of 20,000 tons deadweight (DWT) or more, U.S. and foreign, that call at American ports to have segregated ballast capabilities and that those built under a contract awarded after [December 31, 1979], or delivered after [December 31, 1981], have double bottoms. This amendment is in response to that portion of the President's March 17, 1977, message to Congress relating to double bottoms and segregated ballast on tankers over 20,000 tons DWT entering U.S. ports. The adoption of this amendment would result in reduced amounts of oil spillage into the navigable waters of the United States and oceans.

DATES: 1. Comments must be received on or before: September 1, 1977.

2. Public hearings: The Coast Guard will hold two public hearings on this proposal. The first will be held commencing at 9:00 a.m. on June 16, 1977, and continuing until all commentors have been heard, in the Santa Fe Helix del Mar Room, Town and Country Hotel, 500 Hotel Circle North, San Diego, California 92138. The second will be held commencing at 9:00 a.m. on June 21, 1977, and continuing until all commentors have been heard, in Room 2230, Department of Transportation, Nassif Building, 400 Seventh Street, S.W., Washington, D.C. 20590.

ADDRESSES: Comments should be submitted to Commandant (G-CMC/81), U.S. Coast Guard, Washington, D.C. 20590. Comments will be available for examination at the Marine Safety Council (G-CMC/81), Room 8117, Department of Transportation, Nassif Building, 400 Seventh Street, S.W., Washington, D.C. 20590 (202 426-1477). A copy of the economic evaluation from which the economic summary in this document is taken and the draft environmental impact statement are also available for examination at the above address.

FOR FURTHER INFORMATION CONTACT:

Captain George K. Greiner, Marine Safety Council (G-CMC/81), Room 8117, Department of Transportation, Nassif Building, 400 Seventh Street, S.W., Washington, D.C. 20590 (202 426-1477).

SUPPLEMENTARY INFORMATION: Interested persons are invited to participate in this proposed rulemaking by submitting written data, views, or arguments. Written comments should include the docket number (GCD 77-058), the name and address of the person submitting the comments, the specific section of the proposal to which the comment applies, and the reason for the comment.

All comments received will be considered before final action is taken on this proposal. Interested persons are invited to attend the hearing and present oral or written statements on the proposal. It is requested that anyone desiring to make comments notify Captain Greiner at least 10 days before the scheduled date of the public hearing and specify the approximate length of time needed for the presentation. It is urged that a written summary or copy of the oral presentation be included with the notification.

Drafting Information

The principal persons involved in drafting this proposal are: Commander Richard A. Sutherland, Project Manager, Office of Merchant Marine Safety, and Mr. Stanley Colby, Project Attorney, Office of the Chief Counsel.

Discussion of the Proposed Regulations

The President's message of March 17, 1977, to Congress included measures designed to reduce oil pollution caused by tanker accidents and by routine operational discharges from all vessels. The President informed Congress that the Secretary of Transportation would be instructed to develop new rules within 60 days for all oil tankers 20,000 tons DWT or more, U.S. and foreign, that call at American ports. Included were rules for double bottoms in tankers built in the future and segregated ballast on all tankers. The proposal in this document is in response to the President's initiative.

The regulations would require a double bottom beneath the cargo carrying portion of a seagoing vessel's hull if the vessel is 20,000 tons DWT or more and is constructed under a contract awarded after [December 31, 1979] or if it is to be delivered after [December 31, 1981]. As authorized in the President's message, the Coast Guard may accept technological improvements or alternatives which will result in equivalent pollution protection in grounding accidents.

The regulations would also require that all seagoing vessels of 20,000 tons DWT or more have a segregated ballast capability by [January 1, 1982]. Again, provision is made for acceptance of technological improvements or alternatives which will result in equivalent pollution protection against operational discharges.

The regulations would apply to vessels over 20,000 tons DWT which enter the navigable waters of the United States to engage in trade.

It will be noted that implementation dates in this proposal are enclosed in brackets. This is to indicate that the dates are tentative and may be advanced or delayed by as much as one year, depending upon comments received and the outcome of current international negotiations directed at developing international standards of comparable scope.

This proposal has been reviewed for economic effects under Department of Transportation "Policies to Improve Analysis and Review of Regulations" (41 FR 16200).

The analysis shows that allowing for some market compression, approximately 1250 foreign tank vessels and 220 U.S. seagoing tank vessels would be affected by the segregated ballast retrofit requirement. In addition, approximately 25 new double bottom tankers will have to be built in the United States to meet domestic shipping demands. The projected costs of the requirements to the U.S. seagoing transportation industry is estimated to be $77 million in the 2 year period, 1981 and 1982. Total added costs to be passed on to the U.S. consumer by way of higher freight rates is estimated to be $125 million annually.

The expected benefits of the requirements are reduced amounts of spillage of oil into the navigable water of the U.S. as a result of vessel groundings, reduced amounts of operational discharge to the oceans from deballasting and tank cleaning, and conservation of oil.

In consideration of the foregoing, it is proposed to amend Part 157 of Title 33, Code of Federal Regulations, as follows:

1. Section 157.07 is revised to read as follows:

§ 157.07 Equivalents.

The Coast Guard may accept, in accordance with the procedure in 46 CFR Part 30.15-1, techologically improved or alternate design or equipment as equivalent to a design or any equipment required under this part.

2. Section 157.10 is added to read as follows:

§ 157.10 Segregated ballast and double bottoms.

(a) After [December 31, 1981,] a vessel of 20,000 tons DWT or more must have segregated ballast tanks that have a total capacity to allow the vessel to meet the draft and trim requirements in paragraph (b) of this section without recourse to the use of oil tanks for water ballast.

(b) In any ballast condition during any part of a voyage, including that of lightweight with only segregated ballast, the vessel's drafts and trim must have the capability of meeting each of the following requirements.

(1) The molded draft amidship (dm) in meters without vessel deformation must not be less than dm in the following mathematical relationship:

$$dm = 2.0 + 0.02L$$

(2) The drafts at the forward and after perpendiculars must correspond to those determined by the draft amidship as specified in paragraph (b)(1) of this section, in association with trim by the stern of no more than 0.015L.

(3) The minimum allowable draft at the after perpendicular is that which is necessary to obtain full immersion of the propeller.

(c) A vessel may have pollution protection against operational discharges equivalent to paragraph (b) of this section that is accepted under §157.07.

(d) The vessel may be designed to carry ballast water in cargo tanks during the condition described in § 157.35.

(e) A vessel of 20,000 tons DWT or more for which the construction contract is awarded after [December 31, 1979] or which is delivered after [December 31, 1981] must—

(1) Have a double bottom that does not carry oil and that is at least the molded breadth divided by fifteen ($^{B}/_{15}$) or two meters in height, whichever is less, under each oil cargo tank; or

(2) Have pollution protection against groundings equivalent to paragraph (e) (1) of this section that is accepted under § 157.07.

(f) Any excess capacity of segregated ballast under paragraph (b) of this section that exceeds the double bottom capacity must be distributed adjacent to the side shell of the vessel.

3. Subpart B is amended by adding § 157.24a to read as follows:

§ 157.24a Submission of segregated ballast calculations.

After [December 31, 1981,] the owner of a vessel under § 157.10(b) shall submit the following to the Coast Guard before that vessel enters the navigable waters of the United States:

(a) Calculations to substantiate compliance with the segregated ballast distribution requirements in § 157.10(b).

(b) Plans and specifications for the vessel that include—

(1) Design characteristics;

(2) A lines plan;

(3) Curves of form (hydrostatic curves) or hydrostatic tables;

(4) A general arrangement plan of each deck and level;

(5) Inboard and outboard profile plans showing oiltight and watertight bulkheads;

(6) A midship section plan;

(7) A capacity plan showing the capacity and the vertical and longitudinal centers of gravity of each cargo space, tank, and similar space;

(8) Tank sounding tables or tank capacity tables;

(9) Draft mark locations;

(10) Detailed plans of watertight doors; and

(11) Detailed plans of vents.

(c) A certified statement accepting the design of the vessel by the classification society that oversees the vessel if that design meets the classification society's rules and the requirements of § 157.10.

(Title II, Sec. 201, 86 Stat. 427, as amended (46 U.S.C. 391a); 49 CFR 1.46(n)(4))

NOTE.—The Coast Guard has determined that this document contains a major proposal requiring preparation of an Economic Impact Statement under Executive Order 11821, as amended, and OMB Circular A-107 and certifies that an Economic Impact Statement has been prepared.

Dated: May 6, 1977.

O. W. SILER,
Admiral, U.S. Coast Guard,
Commandant.

[FR Doc.77-13896 Filed 5-13-77;8:45 am]

[33 CFR Part 157]

[CGD 77-063]

IMPROVED EMERGENCY STEERING STANDARDS FOR OIL TANKERS

AGENCY: Coast Guard, DOT.

ACTION: Proposed Rules.

SUMMARY: The Coast Guard is proposing to amend the rules for the protection of the marine environment relating to tank vessels carrying oil in bulk by requiring improved emergency steering standards for all oil tankers of 20,000 deadweight tons or more, both U.S. and foreign, that call at U.S. ports. This proposal implements the portion of the President's message of March 17, 1977, to Congress concerning measures for reducing pollution caused by tanker accident. The President's message directed that the standards in this proposal and other regulations would be developed. Adoption of the regulations in this proposal would reduce the probability of collision and grounding of oil tankers caused by steering failure and would, therefore, reduce the risk of oil pollution as well as property damage, personal injury, and death that could result from these accidents.

DATES: 1. Comments must be received on or before: September 1, 1977.

2. Public hearings: The Coast Guard will hold two public hearings on this proposal. The first will be held commencing at 9:00 a.m. on June 16, 1977, and continuing until all commenters have been heard, in the Santa Fe Helix del Mar Room, Town and Country Hotel, 500 Hotel Circle North, San Diego, California 92138. The second will be held commencing at 9:00 a.m. on June 21, 1977, and continuing until all commenters have been heard, in Room 2230, Department of Transportation, Nassif Building, 400 Seventh Street, S.W., Washington, D.C. 20590.

ADDRESSES: Comments should be submitted to Commandant (G-CMC/81), U.S. Coast Guard, Washington, D.C. 20590. Comments will be available for examination at the Marine Safety Council (G-CMC/81), Room 8117, Department of Transportation, Nassif Building, 400 Seventh Street, S.W., Washington, D.C. 20590. Copies of the economic evaluation from which the economic summary in this document is taken are available for examination at the above address. Copies of the environmental impact declaration are also available at the above address.

FOR FURTHER INFORMATION CONTACT:

Captain George K. Greiner, Marine Safety Council (G-CMC/81), Room 8117, Department of Transportation, Nassif Building, 400 Seventh Street, S.W., Washington, D.C. 20590. (202-426-1477).

SUPPLEMENTARY INFORMATION: Interested persons are invited to participate in this proposed rule making by submitting written data, views, or arguments. Written comments should include the docket number (CGD 77-063), the name and address of the person submiting the comments, the specific section of the proposal to which the comment applies, and the reason for the comment. The proposal may be changed in light of comments received. All comments received will be considered before final action is taken on this proposal.

Interested persons are invited to attend the hearing and present oral or written statements on this proposal. It is requested that anyone desiring to make comments notify Captain Greiner at least 10 days before the scheduled date of the public hearing and specify the approximate length of time needed for the presentation. It is urged that a written summary or copy of the oral presentation be included with the notification.

DRAFTING INFORMATON

The principal persons involved in drafting this proposal are: Commander Robert G. Williams, Project Manager for the Office of Merchant Marine Safety, and Mr. William R. Register, Project Attorney for the Office of Chief Counsel.

DISCUSSION OF THE PROPOSED REGULATIONS

1. The President's message of March 17, 1977, to Congress included initiatives designed to reduce oil pollution caused by tanker accidents and by routine operational discharges from all vessels. The President informed Congress that the Secretary of Transportation would be instructed to develop new rules within 60 days for all oil tankers of 20,000 deadweight tons or more, both U.S. and foreign, that call at U.S. ports. Included were rules to improve emergency steering standards on oil tankers. The proposal in this document is in response to the President's initiative.

2. As provided in the President's message, acceptance of technological improvements or alternatives which will result in equivalent pollution protection will be allowed in lieu of the equipment proposed in this notice. Procedures for acceptance of equivalents are currently contained in § 157.07 of Part 157. Section 157.07 is being revised in accordance with the President's commitment and is contained as a proposal in the "Proposed Rules for Tank Vessels Carrying Oil in Trade", which appears in this issue of the FEDERAL REGISTER.

3. Sufficient time is needed for existing and new vessels to comply with the equipment requirements in these propos-

als and to develop operating procedures with respect to using the equipment. Accordingly, the effective date proposed for the regulations is one year after they are published as final rules.

4. The proposed regulations would apply to all oil tankers of 20,000 deadweight tons or more that call at U.S. ports. The purpose of the proposed regulations is to reduce the probability of collision or grounding of oil tankers caused by a steering failure. A reduction in the probability of these accidents would reduce the risk of oil pollution as well as property damage, personal injury, and death that could result from these accidents.

A Coast Guard review of vessel casualty reports shows that 87 casualties involving failure of steering gear or a steering gear control system were reported between 1963 and 1976 on tank vessels of 20,000 deadweight tons and over. Forty of these casualties occurred on foreign vessels operating in U.S. navigable waters and the remaining casualties occurred on U.S. vessels. Though no deaths or pollution incidents were reported as a result of these casualties, vessel damage and other property damage occurred and the potential of pollution resulting from collision or grounding was present in each casualty. The potential for collision or grounding and subsequent pollution as a result of steering failure cannot be ighored when considering the increasing number of vessels being used to transport oil in bulk.

5. In addition to the proposals in this notice, the Coast Guard is preparing proposed amendments to Subchapter J of Title 46, Code of Federal Regulations, that in part contain provisions for steering gear power and control systems on new U.S. vessels. The proposals in Subchapter J are based upon the recommendations for steering gear power and control systems contained in International Maritime Consultative Organization (IMCO) Resolution A.325 (IX) entitled "Recommendations Concerning Regulations for Machinery and Electrical Installations in Passenger and Cargo Ships." IMCO Resolution A.325 (IX) was adopted by the IMCO Assembly on November 12, 1975.

6. The Coast Guard recognizes that problems of steering failure are not limited to oil tankers and in the future will be considering proposals to make the rules in this notice applicable to other tank vessels as well as to other types of vessels.

7. The proposals in this notice contain requirements for steering failure alarms, requirements for recovering rudder control after failure of a steering gear control system, and requirements for submitting steering control information to the Coast Guard and in certain cases for retaining the information on board the vessel.

8. Section 157.03(aa) contains a definition of "steering gear control system" as the term is used in the proposed regulations. This definition will also appear in the proposed amendments to Subchapter J of Title 46 that are currently being prepared. The definition would include a differential control unit as a component of a steering gear control system. Accordingly, on an existing vessel that utilizes a common differential control unit for its steering gear control systems, an additional differential control unit would be required in order to comply with the requirement in § 157.20(a), which requires the capability to recover rudder control after a failure in the steering gear control system in use. If the failure occurred in the differential control unit, a second unit would be needed in order to assure recovery of rudder control.

9. Proposed § 157.20 requires each oil tanker of 20,000 deadweight tons or more to have a steering failure alarm that would provide an audible and visible warning in the pilothouse in the event of loss of rudder control from the pilothouse. The 5 degree position variation and 30 second time period proposed in this requirement are necessary to prevent nuisance alarms caused by normal variation between the rudder position ordered and the actual rudder position.

Proposed § 157.20 applies only to a vessel that has a steering gear control system of the type required by 46 CFR 58.25–45(a). Section 58.25–45(a) of Title 46 in part requires that the arrangement of the steering gear control system and the steering gear components must provide full follow-up control of the rudder. If the vessel is steered by other means, constant use of a rudder angle indicator is necessary; or, if automatic steering gear control equipment is used, alarms are built into the equipment. In either event, early warning of a steering failure is provided when using these other means of steering without the need of an additional warning.

Proposed § 157.20 also requires the proposed alarm system to be separate from and independent of each steering gear control system on the vessel. The purpose of providing separate arrangement of the alarm system is to minimize the probability of simultaneous damage to both the alarm system and a steering gear control system from a source external to these systems. The alarm system must be independent of each steering gear control system so that failure of a component of a steering gear control system will not result in failure of the alarm.

10. Proposed § 157.20a requires that a means be provided to recover control of the rudder within 45 seconds after detection of a failure of the steering gear control system in use. The proposed 45 second time limit is needed to perform necessary operations to regain steering control such as transferring control switches, shifting hydraulic systems, and engaging a trick wheel.

Paragraph (b) of § 157.20a describes the measure of rudder control that must be recovered after failure of a steering gear control system. This capability is the same as the capability recommended in IMCO Resolution A.325 (IX) for operation of auxiliary steering gear.

In order to comply with proposed § 157.20a, equipment modifications to present steering gear control systems on vessels may be necessary though in many instances vessel operators could elect to provide manning of steering stations in lieu of making equipment modifications.

11. Proposed § 157.24b provides that in the case of a U.S. vessel information showing compliance with the proposed alarm and rudder control requirements must be submitted to the Coast Guard. The proposal also provides that in the case of a foreign vessel this information must be on board whenever the vessel operates in the navigable waters of the United States.

12. Proposed § 157.51 contains a requirement to follow the procedure in § 157.20a for recovering rudder control.

13. This proposal has been reviewed for economic effects under Department of Transportation "Policies to Improve Analysis and Review of Regulations" (41 FR 16200). Approximately 1800 oil tankers of 20,000 deadweight tons or more call at U.S. ports. The total costs for these vessels to comply with the requirements proposed in this notice during the first two years after they become effective are expected to be approximately $16,575,000. The estimated costs to U.S. vessels during the first two years are expected to be $820,000 to install steering failure alarm systems and $3,100,000 to comply with the requirement to recover steering control. The remaining costs would be associated with foreign vessels. The total, estimated costs assume that approximately 50 percent of the affected vessels would comply with the requirements by means of manning of steering stations other than the pilothouse.

Compliance with the proposed requirements should result in fewer groundings and collisions and in a corresponding reduction in probability of pollution, property damage, injury, and death.

In consideration of the foregoing, it is proposed to amend Part 157 of Title 33, Code of Federal Regulations, as follows:

1. Section 157.03(aa) is added to read as follows:

§ 157.03 Definitions.

* * * * *

(aa) "Steering gear control system" means a group of devices and cables forming a network that regulates and guides the operation of a steering gear.

2. Section 157.20 is added to read as follows:

§ 157.20 Steering failure alarm.

(a) This section applies to each vessel of 20,000 deadweight tons or more that has a steering gear control system of the type required by 46 CFR 58.25–45.

(b) Each vessel must have an alarm system that activates an alarm in the pilothouse whenever the actual rudder position differs for thirty or more seconds by more than five degrees from the rudder position selected by the helmsman.

(c) The alarm system must be separate from and independent of each steering gear control system, except that the alarm system may receive input from the steering wheel shaft.

(d) The alarm must be both audible and visual and must be of a type distinctive from each other alarm in the pilothouse.

NOTE.—This section becomes effective one year after the final regulations are published.

3. Section 157.20a is added to read as follows:

§ 157.20a Recovery of rudder control.

(a) Each vessel of 20,000 deadweight tons or more that calls at a U.S. port must have equipment and procedures to recover adequate control of the rudder within 45 seconds after a failure in the steering gear control system in use has been detected.

(b) A vessel meets the requirements in paragraph (a) of this section if it has either of the following combinations of procedures and equipment, although other combinations are possible:

(1) Two separate and independent steering gear control systems, associated equipment in the pilothouse for switching from one system to another, and procedures for operating the associated equipment.

(2) Procedures and associated equipment for manning steering gear spaces and emergency steering stations, as necessary, which ensure compliance with the requirement in paragraph (a) for recovering rudder control.

(c) For the purposes of this section, adequate control of the rudder is recovered if the vessel regains the capability to move the rudder from 15 degrees on one side to 15 degrees on the other side in not more than 60 seconds when the vessel is underway at its deepest draft and at one half of its maximum speed ahead or 7 knots, whichever is greater.

NOTE.—This section becomes effective one year after the final regulations are published.

4. Section 157.24b is added to read as follows:

§ 157.24b Submission of steering control information.

(a) The owner of a U.S. vessel of 20,000 deadweight tons or more shall submit the following information to the Coast Guard before the vessel operates in the navigable waters of the United States.

(1) Plans and specifications of the steering failure alarm system required by § 157.20 that contain enough detail to show compliance with that section.

(2) Plans, specifications, and procedures that contain enough detail to show compliance with the requirements in § 157.20a for regaining rudder control.

(b) The owner of each foreign vessel of 20,000 deadweight tons or more that calls at a U.S. port shall have on board the information described in paragraph (a) of this section whenever operating in the navigable waters of the United States.

NOTE.—This section becomes effective one year after the final regulations are published.

5. Section 157.51 is added to read as follows:

§ 157.51 Procedures for recovery of rudder control.

The master of a vessel of 20,000 deadweight tons or more that calls at a U.S. port must ensure that the procedures required by 157.20a for recovering rudder control are followed whenever the vessel is operating on the navigable waters of the United States.

(Title II, sec. 201, 86 Stat. 427, as amended (46 U.S.C. 391a); 49 CFR 1.46.)

NOTE.—The Coast Guard has determined that this document does not contain a major proposal requiring preparation of an Economic Impact Statement under Executive Order 11821, as amended, and OMB Circular A-107.

Dated: May 9, 1977.

O. W. SILER,
Admiral, U.S. Coast Guard,
Commandant.

[FR Doc.77-13897 Filed 5-13-77;8:45 am]

[33 CFR Part 164]

[CGD 77-016]

VESSELS OF 10,000 GROSS TONS OR MORE

Proposed Additional Equipment

AGENCY: Coast Guard, DOT.

ACTION: Proposed rule.

SUMMARY: The Coast Guard is considering amending the Navigation Safety Regulations by adding a requirement for vessels of 10,000 gross tons or more, both U.S. and foreign vessels calling at United States ports, to have a second radar system and collision avoidance equipment. This amendment could implement that part of the President's March 17, 1977, message to Congress concerning a requirement for backup radar systems with collision avoidance equipment on all tankers over 20,000 deadweight tons (dwt) entering U.S. ports. The adoption of this amendment could result in tangible savings for industry and government including less vessel damage or loss, and lower investigation, search and rescue, and pollution clean-up costs.

DATES: 1. Comments must be received on or before September 1, 1977. 2. Public Hearings: The Coast Guard will hold public hearings on this proposal. The first hearing will be held commencing at 9:00 a.m. on June 16, 1977, and continuing until all commentors have been heard, in the Santa Fe Helix del Mar Room, Town and Country Hotel, 500 Hotel Circle North, San Diego, California 92138. The second will be held commencing at 9:00 a.m. on June 21, 1977, and continuing until all commentors have been heard, in Room 2230, Department of Transportation, Nassif Building, 400 Seventh Street SW., Washington, D.C. 20590.

ADDRESSES: Comments should be submitted to Commandant (G-CMC/81), U.S. Coast Guard, Washington, D.C. 20590. Comments will be available for examination at the Marine Safety Council (G-CMC/81), Room 8117, Department of Transportation, Nassif Building, 400 Seventh Street SW, Washington, D.C. Copies of studies referred to in this document are available for examination at the above address. A copy of the economic evaluation from which the economic summary in this document is taken is also available for examination at the above address.

FOR FURTHER INFORMATION CONTACT:

Captain George K. Greiner, Marine Safety Council (G-CMC/81), Room 8117, Department of Transportation, Nassif Building, 400 Seventh Street SW, Washington, D.C. 20590, 202-426-1477.

SUPPLEMENTARY INFORMATION: Interested persons are invited to participate in this rulemaking by submitting written data, views, or arguments. Written comments should include the docket number (CGD 77-016), the name and address of the person submitting the comments and the specific section of the proposal to which each comment is addressed. All comments received will be considered before final action is taken on this proposal. Interested persons are invited to attend the hearings and present oral or written statements on this proposal. It is requested that anyone desiring to make oral comments notify Captain Greiner at least 10 days before the scheduled date of the public hearing and specify the approximate length of time needed for the presentation. It is urged that a written summary or copy of the oral presentation be included with the request.

DRAFTING INFORMATION

The principal persons involved in drafting this proposal are Mr. Fred Schwer, Project Manager, Office of Marine Environment and Systems, and Mr. Stanley Colby, Project Attorney, Office of the Chief Counsel.

DISCUSSION OF THE PROPOSED REGULATIONS

An advance notice of proposed rulemaking entitled "Marine Traffic Requirements" was published in the FEDERAL REGISTER on June 28, 1974 (39 FR 24157). Among the many concepts advanced were proposals to require a second radar and an "anti collision device" on all vessels of more than 10,000 gross tons operating on the navigable waters of the U.S. Three commenters responded negatively regarding the second radar, primarily because of the retrofit costs. Four commenters responded negatively concerning the "anti collision device". They stated that: (1) the variety of such devices is so great as to make compliance difficult without "tighter" specifications; and (2) the collision avoidance capability of those devices is based on a presumed steady state of relative motion between vessels—a condition which rarely prevails on inland waters.

Navigation Safety Regulations were proposed in the May 6, 1976, issue of the FEDERAL REGISTER (41 FR 18766). The

proposed requirement for a second marine radar system was retained despite the three negative comments. In the Coast Guard's view, loss of radar capability on a vessel of 10,000 gross tons or more imposes an unacceptable risk factor. Redundancy was deemed necessary for safety. However, the proposed requirement for a collision avoidance system was dropped in light of the comments mentioned above.

Fifteen commenters responded to the proposed second radar requirement. Five suggested that we further specify one 3-cm and one 10-cm radar. Four requested additional specifications, such as stabilization, PPI scope size, mode of presentation, and reflection plotter. Six comments were negative, again citing retrofit costs, limited usefulness in confined waters, and complaining of "useless" redundancy. The June 30, 1974, Advance Notice of Proposed Rulemaking proposed a requirement for both 3-cm and 10-cm radars. The Notice of Proposed Rulemaking of May 6, 1976, did not specify wavelengths. Generally speaking, the longer wavelength radar gives better adverse-weather performance because of its ability to penetrate water droplets. This advantage is gained at the cost of resolution. The signal of the shorter wavelength radar is attenuated more by moisture, but it gives better resolution in good weather. A requirement for a second radar could be based either on a perceived need for operational flexibility or on a need for redundancy. Operational flexibility, the Coast Guard feels, is best left to the vessel operator. The objective of this proposal is to provide, for certain vessels, a degree of radar redundancy and to provide for installation of a collision avoidance device on those vessels.

Seventeen commenters objected to the removal of the proposed requirement for a collision avoidance system. For the most part, the arguments advanced were not persuasive. However, the volume of comments suggested that further study was warranted.

Navigation Safety Regulations (33 CFR 164) were published in the FEDERAL REGISTER (42 FR 5956) as a final rule on January 31, 1977. The regulation did not include a requirement for collision avoidance systems, citing instead the planned issuance of this notice. The proposed requirement for a second radar system was not included pending resolution of the question of collision avoidance system.

On March 17, 1977, President Carter conveyed to Congress a message concerning oil spill risk. In it he directed several initiatives, including the development within 60 days of certain regulations, including "Backup radar systems, including collision avoidance equipment, on all tankers [over 20,000 deadweight tons]". This notice is directly responsive to that mandate. The 10,000 gross ton criteria listed in the advance and proposed notices of rulemaking is (as to tankers) roughly comparable to the 20,000 deadweight tons specified in the President's initiatives of March 17, 1977. As collisions between vessels are not related to their cargo or trade, it was determined that the proposed requirement for a second marine radar and a collision avoidance system should apply to all vessels of 10,000 gross tons or more.

As noted above, the May 6, 1976, notice proposed a requirement for a second marine radar system on all vessels of 10,000 gross tons or more. That requirement was withheld from the final rulemaking in anticipation of this proposal that a collision avoidance system be installed on those same vessels. Some collision avoidance systems have a radar display, actual or synthetic, integrated into the system. Others "add on" to the basic radar system. Delaying implementation of the second radar requirement until a decision is made on possible requirement of a collision avoidance system will allow the ship owner maximum flexibility in compliance.

A collision avoidance system is designed basically to aid mariners in identifying and resolving vessel relative motion problems. Just as a pocket calculator replaces paper and pencil in arithmetic computations, the basic collision avoidance system replaces manual maneuvering board solutions. Experience and good judgment are still the determining factors in safe navigation, with or without a collision avoidance system.

As has been pointed out by several commenters, electronic resolution of the threat posed by closing contacts is far faster than manual methods and does not distract the "conning" officer from other functions. Moreover, an electronic system can handle simultaneously more contacts than a manual system, thus to a point eliminating the problem of saturation by multiple contacts. Additionally, the system can be designed to give warning of closing contacts and to operate in a "trial maneuver" mode to predict the outcome of various responses. This "trial maneuver" capability is entirely dependent upon a steady state of relative motion between vessels. This predicted outcome can be negated by a change of target course or speed. Single or few contacts may be adequately handled by manual methods using a plotter. However, these manual methods do not favorably compare in speed of solution or convenience of data presentation with the computer assisted systems.

The U.S. Maritime Administration requires that collision avoidance systems be installed on all new construction tankers subsidized by that agency and recommends that they be installed on all subsidized vessels engaged in foreign trade. A study by the National Research Council, entitled "Human Error in Merchant Marine Safety", published in June 1976, recommends that the systems be required on oceangoing merchant vessels to reduce human error casualties stemming from lack of vigilance. A report of recent British investigations indicates that collision avoidance systems decrease workload and increase operator understanding of the situation around his ship. Conversely, a recent study by Operations Research, Inc., of Silver Spring, Md., commissioned by the Coast Guard, concludes in part that requiring the systems would not appear to be cost-beneficial in preventing vessel casualties on the navigable waters of the U.S.

The Coast Guard has determined that a collision avoidance system in each vessel of 10,000 gross tons or more could contribute positively to the safety of that vessel and to the protection of the environment, particularly in waters in which vessels are not closely confined and are not making repeated course changes dictated by geographic or other conditions.

Economic impact. This proposal has been reviewed for economic effects under Department of Transportation "Policies to Improve Analysis and Review of Regulations" (41 FR 16200). It is estimated that 2,000 foreign and 400 U.S. vessels might be affected if the proposal is adopted. Basic collision avoidance systems range in price from $90,000 to $150,000. At an average cost of $120,000 per vessel, installed, the projected first year cost to the U.S. shipping industry would be $43,200,000 and the impact on the U.S. economy would approximate $76,800,000. Assuming a 10 year amortization period, the second through tenth year impacts would be about $28,800,000 per year. Impact on the U.S. economy would total $307,200,000 over the 10 year period.

The benefits from having this equipment could result in tangible savings, including less vessel damage or loss, less post-vessel-casualty costs, including investigation costs, and search and rescue costs, and less pollution clean up costs. Significant intangible benefits could accrue, including less loss of life or injury and less pollution and resulting harm to the environment.

If adopted, the final regulations would contain a specific effective date on which collision avoidance systems would be required to be onboard vessels of 10,000 gross tons or more while operating on the navigable waters of the U.S. This effective date would follow by one year the publication of the final regulations in order to allow sufficient time for the procurement and installation of the required equipment.

Accordingly, it is proposed to add § 164.37, to Part 164, published in the January 31, 1977, issue of the FEDERAL REGISTER (42 FR 5969), to read as follows:

§ 164.37 Additional Equipment: vessels of 10,000 gross tons or more.

Each vessel of 10,000 gross tons or more must have, in addition to the radar system required in § 164.35(a), a second marine radar system with a computer aided collision avoidance system meeting the specification entitled "Performance Specification For a Computer Aided Collision Avoidance Sytem For Merchant Ships", published by the Radio Technical Commission for Marine Services (RTCM Paper 171-76/EC 205/SC 65-226, Revised January 19, 1977).

NOTE.—Performance Specification For a Computer Aided Collision Avoidance System For Merchant Ships is published in Appendix A for reader's convenience.

(Titles I and II, 86 Stat. 426, 427 (33 USC 1224; 46 USC 391a); 49 CFR 1.46(n)(4)).

NOTE.—The Coast Guard has determined that this document does not contain a major proposal requiring preparation of an Economic Impact Statement under Executive Order 11821, as amended, and OMB Circular A-107.

O. W. SILER,
Admiral, U.S. Coast Guard, Commandant.

MAY 9, 1977.

APPENDIX A—PERFORMANCE SPECIFICATION FOR COMPUTER AIDED COLLISION AVOIDANCE SYSTEM FOR MERCHANT SHIPS

NOTE: Published by the Radio Technical Commission for Marine Services (RTCM), under the Federal Communications Commission, as RTCM Paper 171-76/EC-205/SC 65-226 (revised as of January 19, 1977 and superseding Paper 145-76/SC 65-220).

1. Purpose. The purpose of this document is to specify minimum performance standards for a computer-aided collision avoidance system to assist in correctly interpreting radar data in a manner that will help avoid collisions.

2. Scope. This document provides specifications for the capabilities, data presentation, warning features and necessary inputs of a shipboard computer-aided collision avoidance system, suitable for use on board merchant ships.

3. Inputs to the system. The system shall be capable of accepting signals from the ship's radar(s), gyro compass, speed log (or equivalent speed input), and from a manual speed input. The system shall clearly indicate the speed source selected. The system, whether operating normally or having failed, must not introduce any spurious signals or otherwise degrade the performance of the equipments providing inputs.

4. PPI display. The effective size of the PPI display shall be equivalent to or greater than that provided by a 16" diameter CRT.

The display may be separate or it may be a ship's radar PPI with the collision avoidance data superimposed.

The system shall have both true and relative[1] presentation modes. As a minimum, a capability for relative motion display shall be provided. Projected target track lines should be selectable in either true or relative motion.[2] In addition, the system may provide for true motion. If true motion is provided, the operator shall be able to select for his display either true or relative motion.

Computer generated data for each displayed target shall be in the form of a vector or line indicating target true course or relative motion, with a length proportional to speed, giving both present and extrapolated future positions. The capability to cancel the line or vector presentation of non-threatening targets shall be provided.

The display presentation may be entirely synthetic or synthetics superimposed on the radar video. If the display is superimposed on radar video, means shall be provided to independently adjust the brilliance of the synthetic presentation and of the radar video, including their complete elimination.

Own ship's heading indicator shall be presented on the display in all modes. The indicator shall appear on the display either as a heading line or as a heading marker on the periphery, and shall be accurate within 0.5 degree exclusive of sensor errors. Provision shall be made for adjusting its brilliance and for momentary extinguishing of the heading line. A bearing ring which may be movable shall also be provided.

The system shall be capable of simultaneously representing fixed targets, moving targets and land masses.

The equipment should be provided with at least four range scales, the smallest of which is not more than 3 nautical miles (nm) and the greatest of which is not less than 24 nm.

The brilliance of the display shall be adjustable to the level where it is sufficiently bright to be observed in the normal ambient sunlight expected in a wheelhouse, without the use of a hood, except that a shield may be provided to block direct rays of the sun. The display shall be usable without destroying night vision on a darkened bridge. To enable night vision protection, the display phosphor shall include wavelengths within the band 600 to 750 nanometers, in order to permit the use, where desired, of a red filter. A red phosphor that emits solely within the 600 to 750 nanometer band is an acceptable alternative to the red filter.

For targets having a range of less than 10 miles, within one minute after the moment that:

(a) The target appears on the radar display and is within the acquisition range of the collision avoidance system (for automatic acquisition systems), or

(b) The operator initiates acquisition (for manual acquisition systems), the system should present, as a minimum, an indication of target motion trend. Within 3 minutes a fully accurate target course and speed should be presented on the display and/or in alphanumeric form, assuming the associated radar has a scanning rate of at least once in three seconds. If more than two targets on the same bearing are required, the above presentation times may be degraded. This degradation factor must be restricted to a maximum of two times the above limits for a quantity of four targets on the same bearing and three times for a quantity of six targets on the same bearing, etc.

5. Target acquisition. Target acquisition may be manual or automatic. The system shall be able to track at least (20) targets automatically. The tracked targets shall be marked on the display by distinct tracking symbols.

6. Warning alarms. For a manual acquisition system, audio and visual alarms shall be initiated by any target closing to a preset minimum range, or guard ring. After target acquisition, similar alarms shall be initiated in all systems by any target that is predicted to close to less than a preset minimum range. The target causing the alarms to be initiated shall be clearly identifiable on the display.

For both manual and automatic acquisition systems, means shall be provided to silence the audio alarm for a given threat but the alarm shall resound upon a subsequent threat. A visual indication shall continue until all threats have been eliminated.

7. Alpha-numeric information presentation. For any acquired target, where alphanumeric information is provided, the following shall, as a minimum, be included:

Present range to the target;
Present bearing of the target;
Predicted target range at the closest point of approach (CPA);
Predicted time to CPA (TCPA);
Present course of the target;
Present speed of the target.

This information may be presented on the system display or on a separate display device.

When steady-state tracking conditions have been obtained for a non-maneuvering target, the computational errors introduced by the collision avoidance device shall be no greater, for the parameter under consideration, than the unit value of the least significant digit displayed of that parameter.

8. Accuracy. Operationally the equipment is required to present data on a target of interest with adequate accuracy in a reasonable time. Equipment which can satisfy the following test condition will be deemed to meet this requirement.

For a vessel on a constant collision course at a range of 4 nm, with a relative speed of 20 knots, the equipment shall determine the relative speed to within 10 percent within 3 minutes from the time of acquisition. Further, for a vessel passing 1 nm ahead with a relative speed of 10 knots and a constant direction of relative motion (DRM) of 090°, the equipment shall determine its DRM to within 3 degrees in the same time period.

The above requirements pertain to computational accuracy of the system and do not encompass the inaccuracies of the input sensors.

9. Trial maneuver. The system is to provide necessary information regarding possible maneuvers in order to avoid collisions. The system shall have the capability of simulating possible future situations and presenting such situations on the display. The trial maneuver shall indicate the results of a simulated course change. It may indicate, in addition, the result of a simulated speed change or of a speed change in conjunction with a course change. The simulation shall be initiated by the depression either of a spring-loaded switch or of a function key with a positive identification on the display. The indication of the simulation shall be deleted and the display shall revert to normal operation either by the release of the spring-loaded switch, or after the lapse of a present time not to exceed one minute in the case of the function key. During a simulation the system shall activate warning alarms related to the real traffic situation.

10. Environmental conditions. The Collision Avoidance System, including all components shall be capable of operating in the environment normally found on the bridge and/or associated areas. Requirements as specified in Appendix A shall be used as the minimum required to meet the intent of this specification.

11. Compass-Safe Distances. System units must operate with no effect on the standard magnetic or steering magnetic compass when positioned no closer than the manufacturers specified "Compass Safe Distance".

12. Power supply. The system shall be capable of normal operation when encountering the following variations:

	Percent
AC variations from nameplate voltage	±10
Variations from nameplate frequency	±6
DC variations from nameplate voltage:	
110-250V	−20+10
24-32V	−10+25

The equipment shall have impulse voltage transient protection from pulse transients with amplitudes of ±1200 peak volts, rise times of 2 usec to 10 usec, and durations up to 20 usec.

13. Failure alarms. Suitable visual and audio alarms shall be provided to alert the operator in the event of overall system failure, loss of incoming sensor signals (radar, gyro and speed log) or any other failure detected by the system's self-test capabilities. These alarms shall be in the form of flashing lights, repeating sound signals or some other

[1] A course-up presentation is an acceptable variation of the relative presentation.

[2] For those Collision Avoidance Systems utilizing a combination vector/predicted area of danger (PAD) assessment presentation, projected target track lines may be either true or relative.

method to alert the watch officer when the equipment is unattended. Provision shall be made to silence the audio alarm but visual signals shall remain until the failure is corrected, reset by the operator, or the system shut down.

14. Recording capability. Continuous recording capability of not less than one half hour, of the collision avoidance data to reproduce the display(s) may be provided. Such recording shall be capable of being started and stopped "at will" at the display. Provision shall be made to save the data, when desired, for playback through a suitable device.

[FR Doc.77-13894 Filed 5-13-77;8:45 am]

[CGD 77-057]

[46 CFR Parts 30, 32]

INERT GAS SYSTEM

Proposed Amendment

AGENCY: Coast Guard, DOT.

ACTION: Proposed rule.

SUMMARY: This document proposes to extend the inerting system requirements from tank vessels of 100,000 deadweight tons (dwt) or more to tank vessels of 20,000 dwt or more. This proposal is in response to that part of the President's March 17, 1977, message to Congress concerning a requirement for inert gas systems on all U.S. and foreign flag oil tankers of 20,000 dwt calling at American ports. If the systems are installed, there should be a reduction in the number of in-tank explosions on board tankers.

DATES: 1. Comments must be received on or before:

2. Public Hearings: The Coast Guard will hold two public hearings on this proposal. The first will be held commencing at 9:00 a.m. on June 16, 1977, and continuing until all commenters have been heard, in the Santa Fe Helix del Mar Room, Town and Country Hotel, 500 Hotel Circle North, San Diego, California 92138. The second will be held commencing at 9:00 a.m. on June 21, 1977, and continuing until all commenters have been heard, in Room 2230, Department of Transportation, Nassif Building, 400 Seventh Street, S.W., Washington, D.C. 20590.

ADDRESSES: Comments should be submitted to the Commandant (G-CMC/81), U.S. Coast Guard, Washington, D.C. 20590. Comments will be available for examination at the Marine Safety Council (G-CMC/81), Room 8117, Department of Transportation, Nassif Building, 400 Seventh Street, S.W., Washington, D.C. 20590. A copy of the economic evaluation from which the economic summary in this document is taken is available for examination at the above address.

FOR FURTHER INFORMATION CONTACT:

Captain George K. Greiner, Marine Safety Council (G-CMC/81), Room 8117, Department of Transportation, Nassif Building, 400 Seventh Street, S.W., Washington, D.C. 20590 (202-426-1477).

SUPPLEMENTARY INFORMATION: Interested persons are invited to participate in this proposed rulemaking by submitting written views, data, or arguments. Each person submitting a written comment should include his name and address, identify this notice (CGD 77-057), and give the reason for the comment. This proposal may be changed in light of the comments received. All comments received will be considered before final action is taken on this proposal. Copies of all written comments received will be available for examination by interested persons.

Interested persons are invited to attend the hearing and present oral or written statements on this proposal. It is requested that anyone desiring to make comments notify Captain Greiner at least 10 days before the scheduled date of the public hearing and specify the approximate length of time needed for the presentation. It is urged that a written summary or copy of the oral presentation be included with the request.

Drafting Information

The principal persons involved in drafting this proposal are: Mr. Daniel F. Sheehan, Project Manager, Office of Merchant Marine Safety, and Mr. Stanley Colby, Project Attorney, Office of the Chief Counsel.

Discussion of Proposal

On January 26, 1976, the Coast Guard published regulations in the FEDERAL REGISTER (41 FR 3838) concerning tank vessel fire protection that incorporated the substance of IMCO Resolution A.271 (VIII), adopted by the Assembly of the Inter-Governmental Maritime Consultative Organization on November 20, 1973. These regulations contain provisions that increase the overall level of safety of tank vessels. One of the provisions of this rulemaking was the requirement that inert gas systems be fitted on new tank vessels of 100,000 dwt or more and combination carriers of 50,000 dwt or more. In the preamble of that document, the Coast Guard made a commitment to reexamine the international recommendations concerning the implementation limits for inert gas systems. That reexamination is reflected in this proposal.

In order to detail the rationale for this proposal, it is necessary to review the history and development of the original decision, the intervening events which have influenced that decision, and the action taken in the international forum.

In 1968, a working group was formed as part of the IMCO Subcommittee on Fire Protection. The purpose of this group was to develop a series of international recommendations to improve tank vessel fire safety. This effort was initiated by the United States through both formal and informal channels within the IMCO forum. The work was divided into two primary areas of concern: protection for the cargo tank area; and protection for the accommodation and service spaces.

After considerable debate, the working group accepted the premise that the accommodations and service spaces should utilize the concept of non-combustible construction, a practice successfully employed in U.S.-flag tank vessels for many years.

During the deliberations concerning the recommendations for cargo tank protection, three very large crude carriers (VLCC's), the *Mactra*, *Marpessa*, and the *Hong Haakong* suffered tank explosions, adding a new dimension to the considerations. The similarity between the casualties led several countries to propose requirements related only to the potential problem of in-tank fires and explosions. U.S. requirements protected against in-tank explosions by preventive techniques and required the fitting of a deck foam firefighting system to mitigate on deck or in-tank fires. This position was the basis for the deliberations.

Owners, operators, and assurers were deeply concerned about the unexplained loss of the VLCC's. This concern resulted in a collective research effort which attempted to determine the causative factors involved in the explosions. The area of greatest concentration centered around tank cleaning methods and techniques. The investigation produced significant results in that tank cleaning methods were found to cause an increase in static electricity generation within the tank itself, thereby serving as a potential source of ignition.

As a result of the inability to determine the exact causes of the problem, several steps were taken to attempt to minimize the possibility of reccurenee. On a voluntary basis, owners and operators were invited to utilize the International Chamber of Shipping, "Guidelines for Tank Washing," which were operational steps taken to minimize static electricity generation. The IMCO Assembly proposed a convention amendment (IMCO Res. A.271 (VIII)), "Fire Safety Measures for New Tank Vessels," which until adopted was issued as an interim recommendation. Emphasizing its high priority, all countries were urged by the Assembly to bring the recommendation into force on July 1, 1974 on a voluntary basis. In the intervening time period, an additional Assembly recommendation (IMCO Res. A.326 (IX)), was developed which requires cargo tank protection for vessels that was not as stringent as the previous document. The new recommendation required the fitting of a deck foam system with an augmented foam storage supply if an inert gas system was not fitted. During subsequent deliberations, numerous proposals were presented to require the fitting of inert gas systems for vessels of different sizes under IMCO Res. A.271 (VIII). Proposals ranged from a different tonnage cutoff point to a proposal that concerned the capacity of fixed tank vessel washing machines.

As a result of the explosions aboard the VLCC's, the use of inert gas systems on these vessels increased significantly throughout the world. During this time

period, detailed experience was gained concerning the operation, maintenance and reliability of the system. This information indicated that—

1. There were certain hazards associated with the fitting and use of inert gas systems; and

2. Their reliability had a direct link to the maintenance of the system.

It was found that the inert gas systems (IGS) which were designed to provide protection during the hazardous tank washing process were, in fact, generators of static electricity themselves. In fact, the IGS systems were capable of generating more static electricity than the tank washing machines. In the second instance, the Norwegian Classification Society, Det Norske Veritas determined that approximately 70% of the systems inspected had major maintenance problems that could have seriously affected their use and reliability. Detailed maintenance and operation requirements for this type of system will be the subject of a future proposal in the FEDERAL REGISTER.

After the publication of the substance of IMCO Res. A.271 (VIII) into Subpart 32.53, the problem of tank vessel explosions caused by external sources of ignition was examined in further detail by the Coast Guard which noted that normal tank vessel operation would permit the tank of a vessel to be within the explosive range during loading, transit, and off loading in some cases.

The fact that this condition exists or can exist is known by both designers and operators. In order to prevent ignition of the flammable atmopshere, a U.S.-flag tank vessel must meet specific design and operational requirements:

1. The cargo tank block is classed as a hazardous area and sources of ignition are controlled by mandating explosion proof equipment, prohibition of smoking, and no open flaming devices.

2. Flame screens are required to be fitted in openings into cargo storage tanks and specific operational procedures are prescribed to protect the vessel from ignition sources.

3. Vents are required to be equipped with pressure vacuum valves for Grades A–C cargoes.

4. Cargo discharge and loading is required to be conducted under the supervision of ships' officers and certificated tankermen.

All of these provisions are directed at minimizing the potential for tank vessel fire and explosion. The casualties summarized in the following paragraphs indicate that casualties will occur despite the required safety systems.

For a variety of reasons design and operational requirements have not proven completely successful. The *Corinthos* and *Elias* were conventional tank vessels. For fire safety in the cargo area, they depended basically on identification of, and protection from, potential ignition sources. This protection, however, was not sufficiently comprehensive and when an ignition source, which was not provided for, ignited flammable vapors in the cargo tank, an explosion was initiated. In each case, this explosion then progressed unchecked through the entire cargo tank area. Due to the fact that each vessel was unloading or had just completed off loading, some portion of the vapor space of all cargo tanks was in the flammable range and was, therefore, vulnerable to explosion, when an ignition source developed.

LOSS OF THE TANKER "CORINTHOS"

On January 31, 1975, the U.S.-flag chemical tanker *Edgar M. Queeny* struck the outboard side of the moored 54,000 dwt Liberian flag crude carrier *Corinthos*. A low order explosion immediately resulted within the breached cargo tank and was followed within seconds by a series of increasingly more violent explosions. The explosions spread from tank to tank and the entire deck area of *Corinthos* was soon engulfed in flames and as a result, the vessel broke and sank alongside the British Petroleum dock No. 1, Marcus Hook, PA. Twenty-six persons were killed. Intense firefighting efforts were required for at least 12 hours after the first explosion.

LOSS OF THE TANKER "ELIAS"

On April 9, 1974, the 30,000 dwt Greek flag tanker *Elias* suffered massive multiple explosions, burned, and sank in the Delaware River alongside the Atlantic Richfield Oil Terminal, Fort Mifflin, PA. At the time of accident, the vessel was in the last stages of off loading a cargo of crude oil from the Bachaquero field in Venzuela. A total of 13 persons aboard the vessel (including all principals involved in cargo transfer) were killed. The hull of the vessel came to rest in an upright position on the river bottom. The ensuing fire was fought from the shore by units of the Philadelphia Fire Department and from the water side by units of the U.S. Navy, U.S. Coast Guard, and commercial tugs. Over 30 firefighting and support units were involved at the height of the fire.

In both cases the exact ignition source remains unknown. An ignition source somehow reached the flammable vapors within the cargo tanks. The explosion then progressed through the other cargo tanks on the vessel. Total losses will probably exceed $25,000,000.

TANKERS 20,000 DWT OR MORE: WORLDWIDE CASUALTIES

In the period between 1950 and 1973, there were an estimated 515 fires and explosions on board vessels that occurred either in the cargo tanks or outside the tanks. This figure excludes fires and explosions in the engine spaces. Of that 515, approximately 243 (47%) occurred inside the cargo tanks. Those vessels that were 20,000 dwt or more had over 50% of the intank fires and explosions. The following table is for the period 1950–1973.

	Total number	Percentage
Vessel fires and explosions	515	100
Cargo tank fire and explosions	243	47
Casualties on tankers 20,000 dwt or more	130	53

BENEFITS ACCRUED

As indicated in a preceding paragraph, the requirement for inert gas systems, as recommended in IMCO Resolution A.271 (VIII), developed as a result of the necessity to protect tank vessels of certain sizes during tank cleaning operations. This represents a relatively small portion of a tank vessel's life cycle. The benefits derived from inert gas systems are not limited to this time period. For example:

1. A tank which is inerted cannot sustain an intank explosion if the boundaries of the tank are intact. This provides assurance against intank explosions during other periods when the vessel is not undergoing tank cleaning.

2. Good quality inert gas reduces internal tank corrosion.

3. Higher discharge rates may be obtained by utilizing inert gas system pressure to aid the cargo pumps, thereby reducing tank vessel turn around time.

BACKGROUND OF PROPOSED AMENDMENTS

The President's March 17, 1977 message to Congress included direction that certain ship construction and equipment standards be reformed. Included in the direction was instructions to the Secretary of Transportation to develop new rules within 60 days for inert gas systems on all oil tankers of 20,000 dwt or more, U.S. and foreign, that call at American ports. The proposal in this document is in response to the President's instructions.

Subpart 32.53 currently applies to each tankship of 100,000 dwt or more (metric) and each combination carrier of 50,000 dwt or more (metric) that has a keel laying date after December 31, 1974. The following are excepted from the subpart:

1. Vessels that carry Grade E cargo at a temperature that is 5° C (9° F) or more below its flashpoint or that carry only liquefied gas cargo.

2. Foreign flag tankships of a nation signatory to the International Convention for the Safety of Life at Sea, 1960 that have on board a current valid Safety Equipment Certificate.

It is proposed to retain the substance of this applicability but withdraw the exception to foreign tankships having on board a current valid Safety Equipment Certificate.

U.S.-flag vessels required to fit inert gas systems under 46 CFR Subpart 32.53, which was effective on February 26, 1976 (published in the January 26, 1976 FEDERAL REGISTER (41 FR 3838)) would not be allowed to extend the application of the subpart to the new effective date of this proposed amendment.

In addition, it is proposed to add to the applicability of the subpart tankships and combination carriers of 20,000 dwt or more. In order to allow orderly implementation by industry, it is proposed that those U.S. and foreign tankships or combination carriers that are constructed or converted under a contract awarded before [a date would be inserted that is 6 months after publication of the rule] would have to comply with the inert gas systems requirements within five years after the effective date of the amendment. U.S. tankships or combination carriers contracted for after [a date would be inserted that is 6 months after publication of the rule] would be required to fit an inert gas system on or after the effective date of the amendment. Foreign tankships or combination carriers contracted for after [a date would be inserted that is 6 months after publication of the rule] would have to comply with the inert gas system requirements within five years after the effective date of the amendment.

Since the proposal applies to foreign vessels, in addition to the U.S. vessels currently being regulated, the terms flammable or combustible cargo are used in Subpart 32.53 in lieu of grade classifications to aid comprehension by any reader not familiar with the United States classification of oil cargoes.

Proposed Exceptions. The President's message stated that all oil tankers would be required to be fitted with the provisions outlined in his message. In this proposal, the present exception to the requirement for fitting of an inert gas system on a tankship if it carries Grade E cargoes is continued since in context the President's direction was to extend applicability to smaller vessels rather than to bring low risks substances under regulations. Grade E cargo is by definition a high flashpoint cargo of relatively low risk. Both the international recommendation, IMCO Res. A.271 (VIII), and Coast Guard regulations in 46 CFR 32.53, recognize this and incorporate an exception for high flashpoint liquids.

This proposal has been reviewed for economic effects under Department of Transportation "Policies to Improve Analysis and Review of Regulations" (41 FR 16200).

The analysis shows that approximately 1000 foreign flag and 250 U.S.-flag tank vessels would be affected by the requirement for the fitting of inert gas systems. The projected costs of the requirements to the U.S. consumer over a 9 year period is estimated at one billion seven hundred million dollars.

The expected benefit of the requirement is a reduction in the number of in-tank explosions. These explosions in the past have not only endangered the ship and its crew but port facilities and related waterways.

In accordance with the preceding, it is proposed to amend Subchapter D of Title 46, Code of Federal Regulations, as follows:

§ 30.01–5 [Amended]

1. By amending § 30.01–5(e)(1) of Subpart 30.01 by striking the words "and the safety and cargo handling requirements in Subparts 35.30 and 35.35 of this subchapter" and inserting "Subpart 32.53, Subpart 35.30, and Subpart 35.35 of this subchapter" in place thereof.

2. By revising § 32.53–1 of Subpart 32.53 to read as follows:

§ 32.53–1 Application—T/All.

(a) Except as provided in paragraph (b) of this section, this Subpart applies to tankships or combination carriers of 20,000 dwt tons or more as follows:

(1) Each U.S. Flag tankship that is certificated to carry Grades A, B, C, and D liquids.

(2) Each foreign flag tank vessel engaged in the trade of carrying flammable or combustible liquids to or from a U.S. port, or place, or any such vessel destined from one port or place in the United States to another port or place in the United States.

(b) This Subpart does not apply to vessels designed to carry only—

(1) Liquefied gas cargo; or

(2) Cargo that has a flashpoint of 65.5°C (150°F) or higher by an open cup test (Grade E).

NOTE.—(1) A U.S. tankship of 100,000 dwt tons or more or a U.S. combination carrier of 50,000 dwt tons or more, with a keel laying date on or after January 1, 1975, must comply with Subpart 32.53 after February 25, 1976.

(2) U.S. and foreign flag vessels under § 32.53–1, except those vessels described in note 1, that are constructed or converted under a contract awarded before the effective date of the rule must comply with Subpart 32.53 within 60 months after the effective date of the rule.

(3) A foreign flag vessel under § 32.53–1 that is constructed or converted under a contract awarded after the effective date of rule must comply with Subpart 32.53 within 60 months after the effective date of the rule.

(4) A U.S. vessel under § 32.53–1 that is constructed or converted under a contract awarded after the effective date of the rule must comply with Subpart 32.53 at the time of building or conversion.

(Sec. 201, 86 Stat. 427, as amended (46 U.S.C. 391a); 49 CFR 1.46(n)(4)).

NOTE.—The Coast Guard has determined that this document contains a major proposal requiring preparation of an Economic Impact Statement under Executive Order 11821, as amended, and OMB Circular A–107 and certifies that an Economic Impact Statement has been prepared.

Dated: May 9, 1977.

O. W. SILER,
Admiral, U.S. Coast Guard,
Commandant.

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